

New Replacement Name for *Rana paradoxa* Mocquard, 1890 with Designations of Lectotypes for *Rana paradoxa* and *Rana conspicillata* Günther, 1872: Both Synonymized with *Limnonectes kuhlii* (Tschudi, 1838) (Dicroglossidae: Dicroglossinae)

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Abstract Fanged frogs, now called *Limnonectes kuhlii*, from Borneo are remotely related to true Javanese *L. kuhlii*. For future taxonomy of Bornean fanged frogs, we fix the nomenclatural status of two existing names, *Rana conspicillata* Günther, 1872 and *Rana paradoxa* Mocquard, 1890. Morphological comparison of the type-series revealed heterospecific relationships of the two species. For *R. conspicillata*, we designate BMNH 1947.2.29.20 as the lectotype, and for *R. paradoxa*, we also designate MNHN 1889.222 as the lectotype and propose a replacement name *Limnonectes mocquardi*, in order to stabilize their nomenclature.

Keywords fanged frogs, *Limnonectes kuhlii*, Borneo, nomenclature, lectotype, replacement name

1. Introduction

Recent molecular phylogenetic studies revealed that the fanged frogs hitherto known under the name of *Limnonectes kuhlii* (Tschudi, 1838) are actually a composite of many distinct species. The frogs from the Asian continent have been described (Ye and Fei, 1994; Ye *et al.*, 2007; Matsui *et al.*, 2010b; McLeod, 2008; McLeod *et al.*, 2012), but those found on Borneo Island are not yet taxonomically studied although their remote relationships to Javanese *L. kuhlii* are undoubted (McLeod, 2010; Matsui *et al.*, 2010a, b).

For the *kuhlii*-like fanged frogs from Borneo, two names exist: *Rana conspicillata* Günther, 1872 from Matang, Sarawak, and *Rana paradoxa* Mocquard, 1890 from Kinabalu, Sabah. These names have rarely been referred to since their original description (e.g., Inger, 1966; Malkmus *et al.*, 2002), but it would be useful to clarify their nomenclatural status for future taxonomy

of Bornean fanged frogs. In this short article, we fix the status of these two names.

2. Materials and Methods

We examined all the eight syntypes of *Rana conspicillata* Günther, 1872 housed in Natural History Museum, London (BMNH 1947.2.29.20-27), and all the six syntypes of *Rana paradoxa* Mocquard, 1890 housed in Muséum national d'Histoire naturelle, Paris (MNHN 1889.222-224, MNHN 1889.245-246) and in Natural History Museum, London (BMNH 1947.2.3.66). For these specimens, we took the measurements of snout-vent length (SVL), head length (HL), head width (HW), and tibia length (TL) to the nearest 0.1 mm with dial calipers, following Matsui (1984) and Ohler *et al.* (2004).

3. Results and Discussion

In the type-series of *Rana conspicillata*, an adult female specimen (BMNH 1947.2.29.26, SVL 44.0 mm) is morphologically quite distinct, in particular being sexually mature at a rather small size and possessing much less

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Received: 16 June 2013 Accepted: 1 September 2013

developed toe webbing than the other specimens of the type series. From the latter unique trait, we allocate it to the species named *Rana laticeps* by Inger (1966). The identity of this specimen (BMNH 1947.2.29.26) with *Limnectes khasianus* (Jerdon, 1872) (Ohler and Deuti, in press) should be confirmed.

Although having a limited number of specimens prohibits statistical comparisons, the type-series of the two species do not overlap in some morphometric characters. Specimens of *R. conspicillata* are larger in body size (SVL 73.6 mm in a male and 53.1–68.8 mm in four females) and narrower in head relative to SVL (41.3% in a male and 34.7%–34.8% in four females) than those of *R. paradoxa* (46.6–58.2 mm in two males and 36.6–53.0 mm in three females, and 44.0%–50.2% in two males and 38.0%–40.6% in three females, respectively: Table 1). As already pointed out by Mocquard (1890), the dorsal skin on hindlimb is smoother in *R. paradoxa* than *R. conspicillata*. Thus these two type-series are regarded as representing two distinct species of the *L. kuhlii* group (sensu Dubois, 1987).

In order to stabilize nomenclature we designate the specimen BMNH 1947.2.29.20 (Figure 1) as the lectotype of *R. conspicillata* Günther, 1872 since the specimen was depicted in the original description of Günther (1872: Plate 40, Fig. A). The lectotype is an adult male with a SVL of 73.6 mm, head width of 30.4 mm, and tibia length of 33.6 mm.

As for the name *R. paradoxa* Mocquard, 1890, proposed for a Bornean dicroglossid species of the *L. kuhlii* group, it is a primary homonym of *R. paradoxa* Linnaeus, 1758 (now *Pseudis paradoxa* of Hylidae; Wiegmann, 1822). Under the provisions of Article 60.3 of the International Code of Zoological Nomenclature (ICZN, 1999), we replace the name *R. paradoxa* Mocquard, 1890, by *L. mocquardi* (nomen novum). The species name *mocquardi* is an invariable name in the

genitive, which refers to the original author of the name *R. paradoxa* (Mocquard, 1890).

The type specimens of the nominal species *R. paradoxa* Mocquard, 1890 consist of six syntypes (Mocquard, 1890; Guibé, 1950). They include five specimens in the Paris Museum (MNHN 1889.222–224, 1889.245–246) and one in the Natural History Museum, London (BMNH 1947.2.3.66 [ex BMNH 1889.225], mentioned under Nr. 19 by Boulenger [1920: 63]). No lectotype has ever been designated for this nominal species.

In proposing a new name, we also designate MNHN 1889.222 (Figure 2) as the lectotype of *L. mocquardi*. This specimen was depicted in the original description of Mocquard (1890: Fig. 3). The lectotype is an adult male with a snout-vent length of 58.2 mm, a head width of 29.2 mm, and a tibia length of 24.7 mm.

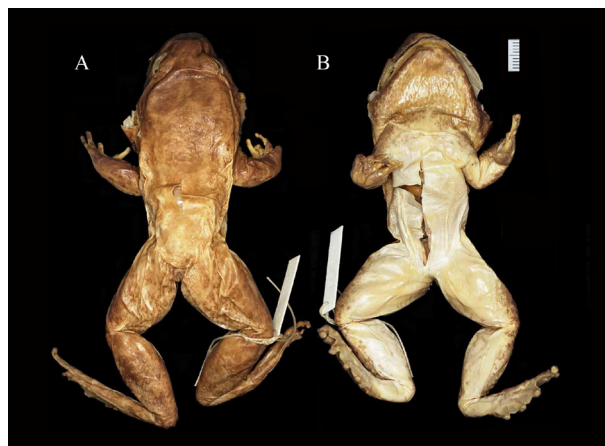


Figure 1 Dorsal (A) and ventral (B) views of the male lectotype of *Limnectes conspicillatus* (Günther, 1872) (New combination, BMNH 1947.2.29.20). Scale bar indicates 10 mm.

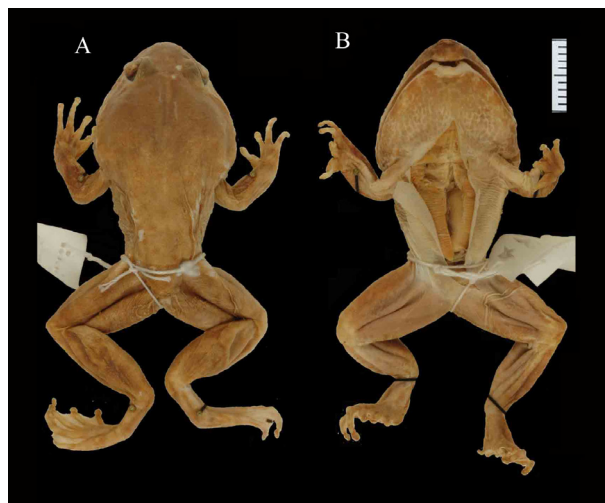


Figure 2 Dorsal (A) and ventral (B) views of the male lectotype of *Limnectes mocquardi* nomen novum (MNHN 1889.222). Scale bar indicates 10 mm.

Table 1 Variation ranges in SVL and ratios to SVL (R) of adult syntypes of *Rana conspicillata* Günther, 1872 and *R. paradoxa* Mocquard, 1890. SVL: snout-vent length. HL: head length. HW: head width. TL: tibia length.

	<i>Rana conspicillata</i>		<i>Rana paradoxa</i>	
Sex	Male	Female	Male	Female
n	1	4	2	3
SVL (mm)	73.6	53.1–68.8	46.6–58.2	36.6–53.0
RHL (%)	45.4	37.9–40.0	44.2–52.2	38.4–48.4
RHW (%)	41.3	34.7–34.8	44.0–50.2	38.0–40.6
RTL (%)	45.7	43.9–45.7	42.4–48.3	45.1–47.5

Acknowledgements We thank McCarthy C. and Clarke B. T. (BM) for allowing us to examine specimens under their care. Examination of museum specimens by MM was made possible by grants from the Monbusho International Scientific Research Programs (Field Research Nos. 01041051, 02041051).

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